Name: Date:

Polynomial Factoring solution (version 694)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 - 12x + 60 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(1)(60)}}{2(1)}$$

$$x = \frac{-(-12) \pm \sqrt{144 - 240}}{2(1)}$$

$$x = \frac{12 \pm \sqrt{-96}}{2}$$

$$x = \frac{12 \pm \sqrt{-16 \cdot 6}}{2}$$

$$x = \frac{12 \pm 4\sqrt{6}\, i}{2}$$

$$x = 6 \pm 2\sqrt{6}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $-8 + 6i$ and $2 + 9i$ in standard form $(a + bi)$.**

Solution

$$(-8 + 6i) \cdot (2 + 9i)$$

$$-16 - 72i + 12i + 54i^2$$

$$-16 - 72i + 12i - 54$$

$$-16 - 54 - 72i + 12i$$

$$-70 - 60i$$

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3. **Write function $f(x) = x^3 - 6x^2 + 11x - 6$ in factored form. I'll give you a hint: one factor is $(x - 1)$.**

Solution

	1	-6	11	-6
1		1	-5	6
	1	-5	6	0

$$f(x) = (x-1)(x^2 - 5x + 6)$$

$$f(x) = (x-1)(x-2)(x-3)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+1) \cdot (x-2) \cdot (x-7)^2$$

Sketch a graph of polynomial $y = p(x)$.